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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/797,789

03/10/2004

Jeffrey A. Nelsen

200313995-1

4493

22879 7590 02/26/2007

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EXAMINER

LAMBELET, LAWRENCE EMILE

ART UNIT

PAPER NUMBER

1732

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/26/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/797,789	<b>Applicant(s)</b> NELSEN ET AL.	
	<b>Examiner</b> Lawrence Lambelet	<b>Art Unit</b> 1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 December 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-14 and 21-23 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 and 3-14 is/are allowed.
- 6) ☒ Claim(s) 21-23 is/are rejected.
- 7) ☒ Claim(s) 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

Applicant's amendment filed on 12/4/2006 is acknowledged. Cancelled claims 2 and 24, and amended claims 1, 3, 21 and 23 are placed of record in the file. Claims 1, 3-14 and 21-23 are currently pending.

### ***Claim Objections***

Applicant is advised that should claim 21 be found allowable, claim 23 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crawford (U.S. Patent 6,936,212), and further in view of Lombardi et al (U.S. Patent 6,437,034).

Crawford discloses a method for solid free form fabrication (SFF), as recited in claim 21. Crawford teaches dispensing and solidifying successive layers of support and build materials. This is shown at lines 48-65 in column 1, 24-47 in column 8, and in claim 17 of the reference. Crawford further teaches removing the support material by phase change. See lines 64-67 in column 8 and lines 21-25 in column 12.

Crawford teaches that the build and support materials can be on the same layer (substrate), as required by claim 22. This is shown at lines 64-67 in column 9.

Crawford does not teach that the support material is water or a fusible water-containing substance, as required by claim 21. Crawford further does not teach removing support material by washing with water at ambient temperature, as required by claims 21 and 23.

Lombardi et al, hereafter "Lombardi", teaches that PEO is suitable for use as a support material at lines 8-15 in column 4. PEO is hydrophilic, and therefore a water-containing substance. Lombardi further teaches that PEO can be washed away with water at lines 5-10 in column 3. Since there is no heating, it can be assumed that the washing is at ambient temperature. Lombardi still further teaches extruding materials through a discharge head (fused deposition modeling head) at lines 45-67 in column 3.

Crawford and Lombardi are combinable because they are concerned with a similar technical field, namely, SFF. One of ordinary skill in the art at the time of the

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invention would have found it obvious to include in the method of Crawford the alternate fusible material and temperature-friendly removal technique, as taught by Lombardi, and would have been motivated to do so to avoid depressed temperature operating conditions.

### ***Allowable Subject Matter***

Claims 1 and 3-14 are allowed.

The prior art of record does not teach or suggest "a fusible crystal hydrate" in combination with the other features instantly claimed.

The examiner regards Crawford in view of Zhang as the closest prior art. Crawford/Zhang discloses dispensing and solidifying support and build materials, wherein support is water-containing and build is other than water-containing, in a layer-wise construction pursuant to a SFF process.

### ***Response to Arguments***

Applicant's arguments, see pages 6-7 of remarks, filed 12/4/2006, with respect to claims 1 and 3-14 have been fully considered and are persuasive. The rejections of claims 1 and 3-14 have been withdrawn.

Applicant's arguments with respect to claims 21-23 have been considered but are moot, except for the Lombardi discussion below, in view of the new ground(s) of rejection.

Applicant argues that Lombardi teaches away from PEO containing water and that water solubility does not equate with water containment.

In response, water containment is a broad term in the absence of any specificity for water content. The Ennari reference shows that PEO has the property of containing water, as distinct from solubility in water. PEO is hydrophilic, and it is prima facie obvious that under normal atmospheric processing conditions, some amount of the molecular composition would be water. That PEO is melt-processable does not mean that there is no water content, as suggested by applicant in the teaching-away argument.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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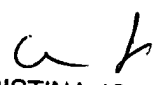
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Lambelet whose telephone number is 571-272-1713. The examiner can normally be reached on 8 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LEL  
2/13/2007

  
CHRISTINA JOHNSON  
SUPERVISORY PATENT EXAMINER  
2/22/07